

Case Study: Collaborative Forecasting with Bed Bath & Beyond

Overview

Many retailers provide retail sales forecasts to their vendor partners, however the validity of those numbers are often in question. While most retailers possess the skill set and tools required to estimate future sales and inventory needs, they may not have the resources (primarily time) to maximize every sku. Bed Bath & Beyond's shared forecasting method is a model more retailers should adopt. With this collaborative effort the retailer and vendor independently develop sales and receipt forecasts, then compare and mutually agree on the plan. Through this process Bed Bath's vendors can produce the appropriate amount of product in order to maximize sales and meet store ordering needs, while limiting mutual inventory liability.

But do vendors have the skill set required to accurately predict sales and inventory needs? That depends on their infrastructure, organization model and production/sourcing strategy. This case study follows the steps we took with a key client, a vendor supplying sheets, duvets, throws and fashion bedding to Bed Bath & Beyond. Using Enhanced Retail Solutions' Desktop Analyst Rolling Forecast Module they are providing the buyer with a comprehensive review of the past as well as prediction of future sales and inventory needs. Through this process not only have they streamlined their inventory, saved warehousing costs and improved in-stock levels but they have become a "trusted advisor" with the buyer.

Developing a Strategy

We decided up front that the first vendor-buyer meeting would set the tone for the collaborative effort. We could go in with just the requested information or make a full force effort to show the buyer what our capability is. Doing so would not only instill confidence in the buyer but perhaps set a benchmark from which other vendors would have to work from. We currently have 4 sheet programs running, but for the purpose of this case study we will focus on a new program with 8 weeks of sales. We'll call this program "Perfect Sheet 650TC".

Next we determined what steps would need to be taken to develop the forecast. They are:

1. Collecting Sales and Inventory Data
2. Determining the forecasting parameters (weeks of supply model, etc)
3. Estimating Lost Sales and Making Adjustments to the Model
4. Calculating estimated sales by month
5. Estimate the target beginning on hand for each month
6. Projecting Inventory Needs Based on Sales and Calculated On Hand
7. Integrating wholesale inventory and on order into the forecast
8. Formatting the forecast and looking at exceptions

Now we will study each of them in detail.

1. Collecting Sales and Inventory Data

Retail sales and inventory are provided to us every week in a Microsoft Excel spreadsheet by the buyer (Exhibit 1). The most relevant fields are unit sales for the past week and past 8 weeks, ending on hand and on order. This data is imported into the Desktop Analyst software. Besides providing a facility to run the forecast, the software allows us to quickly run a variety of reports to catch trends, check color and size ratios and much more.

As opposed to other retailers, this data is provided at company level, no individual store location data is provided. With door level information, more accurate forecasts can be derived because you see the aberrations in in-stock levels. For instance, some doors are sold out or selling through quickly, and will continue to order more inventory, while others have too much, and drag down the average. Even though at a company level the inventory quantity looks right, these aberrations distort the true picture of inventory needs.

	A	B	C	D	E	F	G
1	Vendor Data Sharing						
2							
3	Vendor: ABC Manufacturing						
4	Sku		Store Count TY	Sales Units LW TY	Sales Units L8W LW TY	On Hand Units EOW LW TY	PO On Order Units EOW LW TY
5	Total			351	2,583	13,876	1,174
6	X65X666	PERFECT SHEET 650 WHT FSS	40	8	61	180	58
7	X65X667	PERFECT SHEET 650 WHT QSS	39	28	191	719	38
8	X65X669	PERFECT SHEET 650 WHT	3	(1)	4	52	0
9	X65X67X	PERFECT SHEET 650 WHT SPC	40	13	195	470	57
10	X65X672	PERFECT SHEET 650 WHT KPC	40	14	66	274	58
11	X65X673	PERFECT SHEET 650 IVRY FSS	39	4	34	187	22
12	X65X674	PERFECT SHEET 650 IVRY QSS	40	26	138	528	6
13	X65X680	PERFECT SHEET 650 IVRY CKSS	4	1	4	36	0
14	X65X68X	PERFECT SHEET 650 IVRY SPC	40	20	92	321	48
15	X65X683	PERFECT SHEET 650 IVRY KPC	39	8	48	186	78
16	X65X684	PERFECT SHEET 650 BRWN	39	1	10	205	6
17	X65X687	PERFECT SHEET 650 BRWN	39	18	89	559	8
18	X65X690	PERFECT SHEET 650 BRWN	3	1	5	34	0
19	X65X69X	PERFECT SHEET 650 BRWN	40	9	60	315	27
20	X65X693	PERFECT SHEET 650 BRWN	39	2	30	185	46
21	X65X695	PERFECT SHEET 650 CNV FSS	40	2	21	192	12

Exhibit 1

2. Determining the Forecasting Parameters

Forecasts are based on a variety of parameters and conditions at the time they are run. The weeks of supply model, seasonality and lead time are just a few. This forecast will be a challenge because the buyer recently changed the weeks of supply model from 24 weeks to 8 weeks. Up to this point, we have placed production at the higher model, so it will take time for the inventory level to come down. Regarding seasonality, we look to a combination of historic sales, how holidays affect the calendar and the buyer's promotion plans to come up with a sales curve. The Desktop

Analyst software maintains a database of curves and provides an easy way to turn historic sales into a curve. A sales curve assigns a percentage to each week representing the amount of business expected to be done in that week. Exhibit 2 shows the sales curve we will use.

1	1.5%	18	1.2%	35	2.0%	FEB	7.2%
2	1.5%	19	1.2%	36	1.5%	MAR	4.8%
3	1.5%	20	1.2%	37	1.5%	APR	5.2%
4	1.5%	21	1.2%	38	1.5%	MAY	6.0%
5	1.2%	22	1.2%	39	1.5%	JUNE	4.8%
6	1.2%	23	1.3%	40	1.5%	JULY	5.2%
7	1.2%	24	1.3%	41	1.5%	AUG	8.8%
8	1.2%	25	1.3%	42	1.5%	SEP	8.0%
9	1.2%	26	1.3%	43	1.5%	OCT	6.0%
10	1.3%	27	1.7%	44	3.0%	NOV	9.0%
11	1.3%	28	1.7%	45	3.0%	DEC	12.0%
12	1.3%	29	1.7%	46	3.0%	JAN	23.2%
13	1.3%	30	1.7%	47	3.0%		
14	1.2%	31	2.0%	48	3.0%		
15	1.2%	32	2.0%	49	5.8%		
16	1.2%	33	2.0%	50	5.8%		
17	1.2%	34	2.0%	51	5.8%		
				52	5.8%	ANNUAL TOTAL:	100 %

Exhibit 2

3. Estimating Lost Sales and Making Adjustments to the Model

Especially at the onset of a new program it is hard to determine what the true potential will be. We also need to determine if the planned color and size ratios are accurate. Because we lack insight into individual store performance (and how quickly they execute) we will have to make some generalizations. If the benchmark on a given SKU is to sell through at 3% a week, and we see sell through's higher than that, we can assume the SKU is performing better than planned.

After reviewing all SKU's in the program we estimate the potential to be 5% higher than planned, with the exception of California King Size Sheets. This is true throughout all colors. We also need to discuss the possibility of adding more stores to the distribution due to the strong performance. That could also impact future sales and inventory needs.

4. Calculating Estimated Sales by Month

The sales curve will help us project future sales even though we only have a few weeks of selling. If we have even 1 week of data on the curve, any other point along the curve can be derived. In this case we have 8 weeks of selling (8 data points along the curve). The first step is to determine the total potential sales, then multiply the potential by each month's curve percent to get the monthly sales.

For example:

Unit sales for last 8 weeks: 191
Last 8 weeks on curve worth: 10.02 (add up % for the last 8 weeks)
Potential = 1906 (191/.1002)
Aug Curve % = 9.99%, Sept Curve % = 5.79%
August Sales = 190 (1906 x .0999)
September Sales = 110 (1906 x .0579)

Finally, we want to add 5% to the potential as mentioned in point 3. The new Potential, August and September sales are as follows:

Potential = 1906 x 1.05 = 2001
August Sales = 200 (2001 x .0999)
September Sales = 116 (2001 x .0579)

The key objective in the forecasting meeting with the buyer is to compare our sales estimates with theirs. Once a sales forecast has been agreed upon, receipts will be determined as well. In our forecasting model, we want to know what the required receipts by month will be if our sales estimates are accepted.

5. Estimate the Target Beginning On Hand for each Month

Using the same methodology as estimating sales by month we can calculate the beginning on hand for each month. The calculated beginning on hand for each period is the sum of the next 8 weeks curve %'s starting at the beginning of that period.

For example:

Target Beginning on Hand for the current week = sum of next 8 weeks % on curve = 9.95%
2001 x .0995 = 199 units
August 1 Beginning on Hand: Next 8 weeks on curve starting first week of August: 14.44%
2001 x .1444=289 units

6. Projecting Inventory Needs Based on Sales and Calculated On Hand

Now that we can estimate sales and beginning on hand, we need to create an “open to buy” template to show how each month affects the next. The template starts in the current month using the current on hand. It then subtracts the sales for that month and adds any on order due in that month. The result is the ending on hand for the current period. That can be compared to the calculated beginning on hand of the next month. If the calculated beginning on hand for the next month is larger than the ending on hand from the current month, a buy is required (more inventory). If the beginning on hand for the next month is less than the ending on hand from the current period, we have more inventory than required and no buy is required. These calculations are done for each month. In the event that a buy is required, the forecast assumes you will indeed make that buy. If the buy can’t be made (due to lack of lead time or production availability) the projected ending on hand can be carried over to the beginning of the next period. See exhibit 4 to see a completed template.

7. Integrating wholesale inventory and on order into the forecast

So far our forecast is based only on the retail on hand and on order. But as a manufacturer we may already have production scheduled or goods sitting on the shelf ready to ship (ATS or available to ship). The next step is to add the wholesale inventory and on order into the template. When completed, the template contains all the information we need to know about a SKU to make decisions on. It contains the parameters, selling statistics, the current inventory position (exhibit 3) and of course the open to buy template with estimated sales and buys (exhibit 4). We do have months where are estimated sales are higher than the buyer’s but the unit difference is not large.

# WEEKS SALES	STORE ON HAND	STORE ON ORDER	YTD SALES	AV WK SLS	STORE WEEKS OH	% COMPLETE	% FWD COVERAGE
8	719	38	191	24	31.71	10.0%	10.0%
	ATS	FUTURES			TOT WKS OH		
	107	716			34.60		

Exhibit 3

Month:	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10
CALC BOH	199	289	236	362	647	582	218	198	202	197
ACT BOH	826	764	1280	1164	1044	744	284	198	202	
- Estimated Sales	100	200	116	120	300	460	120	120	104	96
+ On Order	38	716	0	0	0	0	0	0	0	0
EOH	764	1280	1164	1044	744	284	164	78	98	101
Calculated BOH										
Next Month	289	236	362	647	582	218	198	202	197	199
Buy	0	0	0	0	0	0	34	124	99	98
Retailer Forecast	102	185	112	112	285	450	108	108	102	102
% Sales Forecast Diff	-1.87%	8.11%	3.57%	7.14%	5.26%	2.22%	11.11%	11.11%	1.96%	-5.88%
Avail Prod (Y/N)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Exhibit 4

8. Formatting the forecast and looking at exceptions

While every SKU should be reviewed (especially on new items) it is very easy to get information overload if you are reviewing a lot of SKU's and its statistics. That's why we included an exception report (Exhibit 5) and used conditional formatting for highlight aberrations. There are a variety of SKU's that require more inventory now, but more that do not. Over time as we make adjustments to the inventory based on our forecast the variations in % Over/Under should decrease.

Count of Items		% of Total										
Items With A/O Needs	19	46.34%										
> 10% Short of Model	6	14.63%										
> 10% Above Model	25	60.98%										
Total Items With Sales	41											
SKU #	Description	# of Weeks of Sales	EOH This Month	Calc BOH Needs Next Month	% Over/Short Model BOH	A/O BUY	Overage	Store Weeks On Hand	Total Weeks On Hand	Sales Projections		
										3 Months	6 Months	Year
X65X6660	PERFECT SHEET 650 WHT FSS	8	98	92	6.10%		6	17.05	9.44	133	416	632
X65X6678	PERFECT SHEET 650 WHT QSS	8	764	289	164.16%		475	31.71	34.60	416	1296	1961
X65X6694	PERFECT SHEET 650 WHT CKSS	8	18	6	212.04%		12	36.00	60.00	9	26	34
X65X67X6	PERFECT SHEET 650 WHT SPC	8	137	295	-53.60%	158		9.72	7.38	425	1327	2013
X65X6724	PERFECT SHEET 650 WHT KPC	8	296	280	5.71%		16	40.24	33.21	146	451	684
X65X6732	PERFECT SHEET 650 IVRY FSS	8	193	220	-12.27%	27		10.20	12.40	122	423	
X65X6740	PERFECT SHEET 650 IVRY QSS	8	534	620	-13.87%	86		9.60	14.20	301	941	
X65X6805	PERFECT SHEET 650 IVRY CKSS	8	44	6	662.77%		38	72.00	88.00	9	26	
X65X68X3	PERFECT SHEET 650 IVRY SPC	8	321	442	-27.38%	121		8.40	22.60	199	620	948
X65X6830	PERFECT SHEET 650 IVRY KPC	8	240	280	-14.29%	40		9.40	12.60	102	325	493
X65X6848	PERFECT SHEET 650 BRWN FSS	8	208	240	-13.33%	32		12.10	15.40	18	61	91
X65X6872	PERFECT SHEET 650 BRWN QSS	8	568	560	1.43%		8	50.97	54.65	199	611	922
X65X6902	PERFECT SHEET 650 BRWN CKSS	8	38	8	401.91%		30	54.40	67.20	13	39	65
X65X69X0	PERFECT SHEET 650 BRWN SPC	8	310	91	241.21%		219	45.60	42.00	133	408	624
X65X6937	PERFECT SHEET 650 BRWN KPC	8	215	45	5.00%		170	61.60	49.33	66	203	311

Exhibit 5

Preparing For and Attending the Monthly Meeting

Once we have reviewed each SKU we post the estimated sales by month to the Buyer's spreadsheet. For 90% of the SKU's our estimates were higher than the buyer's. This was primarily due to the adjustment for missed business and a slight rebalancing of color and sizes. When the buyer saw the depth and detail of our analysis they felt confident our projections were better.

Summary and Results

Our client was extremely grateful not only for making them look like a star in the eyes of the buyer, but for the countless hours we saved them in preparing for the meeting. The software allowed us to spend more time analyzing the data and making decisions and also eliminates a lot of manual errors (typos). In the end, the increase in sales was roughly 12,000 units or \$360,000 at cost dollars. Additionally, properly flowing out the receipts we anticipate will save \$10,000 in freight, warehouse and handling costs.